



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,407	08/25/2003	Christopher Scott Adams	003A.0035.U2(US)	4026
29683	7590	08/11/2004	EXAMINER	
HARRINGTON & SMITH, LLP			GILMAN, ALEXANDER	
4 RESEARCH DRIVE			ART UNIT	
SHELTON, CT 06484-6212			PAPER NUMBER	
			2833	

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/648,407

**Applicant(s)**

ADAMS ET AL.

**Examiner**

Alexander D Gilman

**Art Unit**

2833

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 12-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-15 is/are allowed.
- 6) ☒ Claim(s) 16-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/24/2003</u> | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 2833

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitchell in view of Jones.

With regard to claim 16, Mitchell discloses a process for attaching a multi-chip module to a circuit substrate comprising:

providing a multi-chip module (10) having a plurality electronic elements (40);

providing circuit substrate (12) supporting thereon a conductive circuit pattern (16, 17) adapted for connection to said multi-chip module;

providing at least one interconnect member (20, 21) for attaching said multi-chip module to said circuit pattern on said circuit substrate, said interconnect member comprising:

a member elongated a longitudinal direction, said member having at least a first elongated side and a second opposed and generally parallel elongated side,

said first and second sides extending in said longitudinal direction;

forming a sub-assembly ((10, 20, 21) by attaching said at least one interconnect member (20, 21) to said multi-chip module make a desired electrical connection between at least one leads of said interconnect member and said at least one electronic element; and

attaching the sub-assembly (10, 20, 21) the circuit substrate to make at least one desired electrical connection between said at least one castellated lead of said interconnect member and said conductive circuit pattern said circuit substrate.

Art Unit: 2833

Mitchell does not disclose that each of said first and second sides having at least one castellated portion wherein depressions are metallized to form castellated leads for connecting at least one electronic element said multi-chip module to said conductive circuit pattern of said circuit substrate.

Jones (US 4,652,977) discloses that the first and second sides of the interconnect having depressions (79) to dispose the metallized conductors

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Mitchell's interconnect with the depressions to dispose the metallized conductors and circuit pads, as taught by Jones, to dependably connect the respective conductive traces of the circuit boards.

With regard to claims 17 and 18, Mitchell when modified by Jones discloses all of the limitations except for each of said first and second sides includes at least one portion free of depressions to use this portion and associated the third and fourth sides for receiving a pick.

In Mitchell -Jones' s interconnect, forming the portion free of depressions, is an obvious expedient since it has been held that omission of an element and its function in a combination where the remaining elements perform the same functions as before involves only routine skill in the art. *In re Karlson*, 136 USPQ 184. In Mitchell- Eide' s interconnect, the location and number of the depressions can vary since a disposition of leads connecting the chips with the metallized depressions can vary.

With regard to claim 19, Mitchell when modified by Jones discloses (Mitchell) a plurality of said interconnect members (20, 21).

Claims 20, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitchell when modified by Jones, as applied to claim 16 above, and further in view of Inoue.

Mitchell when modified by Jones disclose all of the limitations except for electronic elements are provided on both faces of the module.

Inoue (US 4,789,776) discloses electronic elements (103, 108) being provided on both faces of the module.

Art Unit: 2833

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Mitchell's interconnect with the electronic elements being provided on both faces of the module, as taught by Inoue, to rationally use the module's substrate available space.

With regard to claim 21, Mitchell when modified by Jones-Inoue, discloses (Mitchell) a plurality of said interconnect members (20, 21).

***Allowable Subject Matter***

Claims 12-15 are allowed.

No prior art has been found to anticipate or render obvious the presently claimed subject matter.

Specifically, none of the prior art of record discloses the combination of the limitations presented including the following operations:

forming a series openings said circuit pads extending through said member and at least one circuit pad on one of said major faces and at least another circuit pad on said opposing major face, said openings being arranged in said at least two lines; forming a conductive metalization said openings electrically connecting each of said one circuit pads to a respective one of said another circuit pads; dividing said member along a generally central axis of said openings.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander D Gilman whose telephone number is 571 272-2004. The examiner can normally be reached on Monday-Friday, 10:30 a.m. - 8:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula A. Bradley can be reached on 571 272-2800 ext. 33. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2833

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

\*\*\*

*Alex Gilman*

*06/08/04*

**ALEXANDER GILMAN  
PRIMARY EXAMINER**

**ALEXANDER GILMAN  
PRIMARY EXAMINER**